DERMATOLOGICA SINICA 31 (2013) 64–67

Contents lists available at SciVerse ScienceDirect

Dermatologica Sinica

journal homepage: http://www.derm-sinica.com

ORIGINAL ARTICLE

Recurrent herpes labialis among health school students in Kahramanmaraş, Turkey: A cross-sectional survey

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ARTICLE INFO

Article history:
Received: Jul 31, 2012
Revised: Oct 17, 2012
Accepted: Oct 22, 2012

Keywords:
epidemiology
health school students
recurrent herpes labialis
Turkey

ABSTRACT

Objective: The aim of this study was to determine the epidemiologic characteristics of, and the treatments used for, recurrent herpes labialis (RHL) in health students.
Methods: A cross-sectional study was conducted with the participation of 333 nursing and midwifery students. Data on the sociodemographic characteristics of the participants, their history of RHL, and the treatments were collected by means of a standard self-reported questionnaire form.
Results: The point prevalence of RHL was 3.9%, the annual prevalence was 44.7%, and the lifetime prevalence was 52.5%. These prevalences were not related to the participants' place of residence, level of income, school, gender, marital status, or smoking status ($p > 0.05$). RHL was frequently seen on the right side of the lower lip (17.9%). One third of the students who experienced RHL stated that they had applied treatment to the lesion. However, only 20.1% stated that they had used antiviral therapy. Treatment was recommended by a physician for only 16.1% of the subjects.
Conclusions: The prevalence of RHL was high among the health students, who were considered to represent young adults. Although they were students in a school of health, they lacked knowledge about RHL.

Introduction

Herpes simplex type-1 (HSV-1) usually develops in childhood. Following the primary infection, it is then latent in the sensory ganglia for life.[1] As recurrent herpes labialis (RHL), it leads to periodical infections, which are caused by both internal and external factors, such as cold weather, sunlight, infections, trauma, and stress.[2] RHL, or a "cold sore", is a self-limited disease characterized by painful, demarcated bullae at the mucosa–submucosa junction.[3] Fever and constitutional symptoms are rare, and the lesions usually recover completely, without scarring, within 7–10 days. In many cases, a stimulating symptom is absent in recurrent episodes. However, some prodromal symptoms have also been reported.[1] A rapid treatment with oral or topical antiviral drugs may shorten the duration of symptoms and eruptions. Prophylactic treatment with antiviral drugs may be beneficial in preventing relapses.[4] In addition, measures preventing exposure to triggers (e.g., sunscreen cream and lip protectors) may offer protection against RHL episodes.[3] Although the prevalence of HSV-1 infection is high worldwide, it may vary significantly between countries and subpopulations.[5] HSV-1 seroprevalence is particularly high among young adults in some Middle-Eastern countries (80%).[6] The epidemiology of RHL has been somewhat neglected. In addition, the prevalence of RHL reported in previous studies have focused on lifetime occurrences of the disease (lifetime prevalence = LTP), prevalence during the past year (annual prevalence = AP), or the clinical presentation of the lesion (point prevalence = PP).[7–11] However, no studies in Turkey have focused on the epidemiologic characteristics of the disease. Therefore, the aim of this study was to determine the epidemiologic characteristics of RHL, as well as the treatment methods used by nursing and midwifery students.

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1027-8117/$ – see front matter
http://dx.doi.org/10.1016/j.dsi.2012.10.004

Methods

This cross-sectional study was conducted between April 1, 2011 and April 15, 2011 and included 333 nursing and midwifery students attending the School of Health at Kahramanmaraş Sütçü İmam University (KSU). Data on the sociodemographic characteristics of the participants, their history of RHL, and the treatment methods were collected using a standard self-reported questionnaire form. The questionnaires were distributed and completed in classrooms of the School of Health. The students were informed about RHL lesions, and colored photographs of the lesions were shown, before they filled out the questionnaire. In addition, the students were reminded that their participation was voluntary. The questionnaire contained 13 questions aimed at determining sociodemographic characteristics and 15 questions inquiring about treatment methods.

The required approvals were obtained from the Ethics Committee of the KSU Medical School and the Directorate of the School of Health.

Statistical analyses

Statistical analyses were performed using Epi Info 2002 software (CDC, Atlanta, GA, USA). All the variables analyzed were expressed as numbers and percentages. The Chi-square test was used to compare the prevalence of RHL between groups with different demographics. A $p < 0.05$ was considered to be statistically significant.

Results

Of the 400 students attending the School of Health, 333 students (178 students from the nursing department and 155 students from the midwifery department) participated in the study. The rate of participation was 83.3%. The mean age of the participants was 21.1 ± 1.7 years (minimum: 17 years; maximum: 25 years). Of the 333 participants, 68 (20.4%) were male and 265 (79.6%) were female. Some of the sociodemographic characteristics of the participants are given in Table 1.

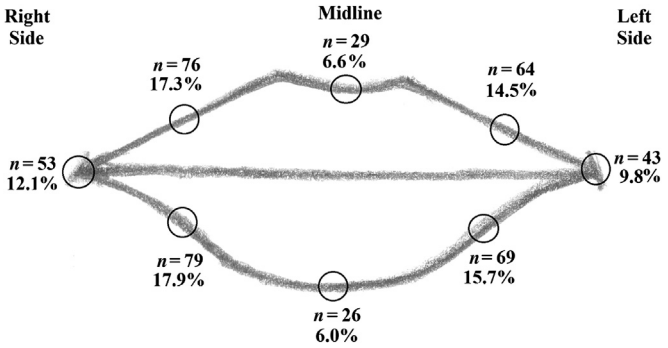

Figure 1 Frequency of locations of 439 recurrent herpes labialis episodes.

The PP of the RHL was 3.9% (13 students), the AP was 44.7% (149 students), and the LTP was 52.5% (174 students). The prevalences were not related to the participants' place of residence, level of income, school, gender, marital status, or smoking status ($p > 0.05$). A relation to feeling healthy was found; the AP and LTP of the RHL decreased significantly with this feeling ($p < 0.05$) (Table 1). RHL was seen on the right side of the lower lip in 79 participants (17.9%) (Figure 1). The mean age of lesion development was 12 ± 4.6 years (minimum 3; medium 12; maximum 25). Of the participants with a history of RHL, 51 (34.2%) responded to the question "How many times did you experience a cold sore on your lip during the past year?" as "At least once" and 33 (22.1%) as "At least twice" (Table 2). The family history was positive in 66 cases (44.2%). The results indicated that a positive family history was important in terms of the intrafamilial transmission of HSV-1.

The knowledge, attitudes, and behaviors of those who experienced RHL during the past year are shown in Table 3. A total of 47 (31.5%) participants who experienced RHL stated that they applied some treatment to the lesion. However, only 30 (20.1%) stated that they used an antiviral treatment. The use of antiviral agents in

Table 1 Demographic variables of the students and its relation to prevalence of recurrent herpes labialis.

Variable	Total		PP			AP			LTP		
	n	%	*n*	%	*p*	*n*	%	*p*	*n*	%	*p*
Gender											
Women	265	79.6	12	4.5	0.46	121	45.6	0.50	141	53.2	0.49
Men	68	20.4	1	1.5		28	41.1		33	48.5	
College											
Nursing	178	53.5	7	3.9	0.85	81	45.5	0.57	91	51.1	0.69
Midwifery	155	46.5	6	3.8		65	41.9		75	48.3	
Place of living											
Kahramanmaraş	133	39.9	3	2.3	0.39	56	42.1	0.43	65	48.8	0.31
Other regions	200	60.1	10	5.0		93	46.5		109	54.5	
Household income (TL/mo)											
<500	25	7.5	2	8.0	0.28	10	40.0	0.21	13	52.0	0.61
500–999	119	35.7	6	5.0		63	52.9		68	57.1	
1000–1499	101	30.3	1	1.0		38	37.6		48	47.5	
1500–1999	70	21.0	3	4.3		28	40.0		33	47.1	
≥2000	18	5.5	0	0.0		7	38.8		8	44.4	
Marital status											
Single	320	96.1	11	3.4	0.29	142	44.3	0.44	164	51.2	0.89
Married	13	3.9	1	7.7		3	23.0		5	38.4	
Medically fit											
Yes	274	82.2	8	2.9	0.06	116	42.3	0.03	136	49.6	0.03
No	59	17.8	5	8.4		32	54.2		36	61.0	
Smoking											
No	277	83.2	11	4.0	0.87	124	44.7	0.84	144	51.9	0.87
Ex-smoker	19	5.7	0	0.0		7	36.8		9	47.3	
Yes	37	11.1	2	6.1		13	35.1		16	43.2	
Total	**333**	**100.0**	**13**	**3.9**		**149**	**44.7**		**174**	**52.5**	

AP = annual prevalence; LTP = lifetime prevalence; *p* by Chi-square test; PP = point prevalence; TL = Turkish Lira (1 TL = $0.543).

Table 2 Episodes of recurrent herpes labialis by each student in the past year.

Episode of RHL in last year	*n*	%
1	51	34.2
2	33	22.1
3	29	19.5
4	11	7.3
5	10	6.7
6 and above	15	10.1
Total	149	100.0

RHL = recurrent herpes labialis.

students with RHL in the past did not affect the frequency of RHL ($p > 0.05$). Home remedies, such as lipstick, garlic, and hot spices, were also used to treat the lesions. The treatment was most commonly recommended by a friend, pharmacist, or relative. Only 16.1% responded that their treatment had been recommended by a physician. Of the participants with a history of RHL, 72 (48.3%) responded the question "When does a cold sore develop?" as "Stress", 47 (31.5%) as "When I am afraid", 20 (13.4%) as "When I get ill" and 15 (10.1%) as "When I become immunocompromised". Of the 149 students who experienced RHL during the past year, 112 (75.2%) complained of pain, 50 (33.6%) of a burning sensation, 37 (24.8%) of itching, and 16 (10.7%) of a bad appearance. Among the students who experienced RHL during the past year, 143 knew that the causative agent of the cold sore was a virus. Of these students, 104 (69.8%) stated that their cold sore recovered within 1 week, 109 (73.2%) stated that they had learned about cold sores in school, and 12 (8%) stated that they had learned about them on the internet.

Table 3 Knowledge, attitudes, and behavior of participants who experienced recurrent herpes labialis in the past year ($n = 149$).

Items	*n*	%
What did you use for treatment?		
Cold sore cream (antiviral cream)	30	20.1
Cream	10	6.7
Hot application	3	2.0
Lipstick	3	2.0
Garlic	1	0.7
No response	102	68.5
Who recommended the treatment?		
Physician	24	16.1
Friend	9	6.0
Pharmacist	6	4.0
Myself	5	3.4
Mother	4	2.7
Internet	1	0.7
No response	100	67.1
When does a cold sore develop?		
Stress	72	48.3
When I am afraid	47	31.5
When I get ill	20	13.4
When I become immunocompromised	15	10.1
During influenza	12	8.1
In case of virus contamination	6	4.0
What are the symptoms?		
Pain	112	75.2
Burn sensation	50	33.6
Itching	37	24.8
Swelling	37	24.8
Bad appearance	16	10.7
Redness	12	8.1
Bleeding	8	5.4
Fever	6	4.0
What is the causative agent?		
Virus	143	96.0
Others	6	4.0
How long does it take to heal?		
Within 1 wk	104	69.8
Longer than 1 wk	45	30.2
From where did you learn about cold sore?		
School	109	73.2
Internet	12	8.0
Books	11	7.4
Friends	10	6.7
Physician	7	4.7

Discussion

In our study, the LTP of the RHL was 52.5%. The literature reported that the LTP of RHL was 17.6% in some Asian countries,[8] 26.4% among Jordanian college students,[12] 26.6% in Sweden,[13] 30.2% in Africa,[8] 31% in some European countries,[8] 38.2% among health science students in America,[7] and 40.2% in North America.[8] The rate found in our study was higher than in other countries, which might indicate a higher HSV-1 seroprevalence. Because contamination routes are unknown, care was not taken to prevent contamination. However, the public should be educated about this important topic.

The PP was 3.9% in our study, which was almost two times greater than the 2.3% found among Jordanian students.[12] The AP was 44.7% in our study, which shows that approximately half of the students experienced RHL at least once a year. We considered this to be a high rate in terms of disease burden.

The prevalence did not correlate with the place of residence, level of income, school, gender, marital status, or smoking status of the participants ($p > 0.05$) (Table 1). In some studies, because RHL cases were detected more frequently among individuals who lived in rural areas, it was emphasized that this finding could be related to socioeconomic status. Sawair et al posited a possible relationship between level of income and LTP. However, this relationship was statistically weak and not detected in other prevalences.[12] In some studies, although RHL prevalence was statistically reported to be significantly low among smokers, particularly among water pipe (narghile) smokers,[11,14] no relationship was found between smoking and RHL prevalence in our study, which was similar to the findings of Sawair and co-workers.[12] In our study, the absence of a significant difference between the nursing and midwifery students in terms of RHL prevalence was normal because, as students in the School of Health, they are exposed to similar conditions and stressful events. Moreover, no relationship was detected between RHL prevalence and gender in our study. Similarly, no statistically significant difference has been reported in other studies.[7,8,12] These results may indicate that HSV-1 seropositivity does not vary between genders.[15] However, in some studies, RHL prevalence was found to be higher among women than among men, reportedly because the women disliked herpetic lesions on their lips more than men did.[13,16] A relationship to feeling healthy was found; the AP and LTP of the RHL decreased significantly with this feeling ($p < 0.05$). A statistically significant difference was also found in other studies.[7,8,12]

One-third of the participants (34.2%) who experienced RHL responded to the question "How many times did you develop a cold sore on your lip during the past year?" as follows: one-third (34.2%) responded "At least once a year", and one-fifth (22.1%) responded "At least twice a year" (Table 2). In the study by Sawair et al, 51.2% of the participants were found to experience RHL at least twice a year.[12] Early treatment was reported to reduce the frequency and severity of recurrent episodes by enabling the rapid recovery of lesions and by reducing pain.[17] Recurrence of herpes may lead to the impairment of general and mental health, physical weakness, and decreased ability to do daily activities.[17]

To elicit the participants' opinions about triggering factors, we asked the question "When does a cold sore develop?" for which 48.3% responded "Stress", 31.5% responded "When I am afraid", 13.4% responded "When I get ill", and 10.1% responded "When I become immunocompromised". Sawair and co-workers reported stress to be the second leading cause of RHL outbreaks.[12]

In our study, one-third of the participants (31.5%) who experienced RHL stated that they had applied some treatment to the lesions. However, only 20.1% used antiviral therapy. The use of antiviral agents by students with RHL in the past year did not affect the frequency of RHL ($p > 0.05$). In Jordan, Sawair et al indicated that half of the participants with a history of RHL reported that they received treatment, with 18.2% reporting that they used an antiviral agent.[12] In the present study, the rate of those who received treatment was lower, and the rate of use for antiviral agents was similar. However, in a study conducted using a French population, the rate of using antiviral agents was reported to be higher (92.1%).[16] In our study, the participants who experienced RHL used home remedies, such as lipstick, garlic, and hot spices. Similar applications were reported in the study by Sawair et al.[12] In our study, treatment was most commonly recommended by a friend, pharmacist, or relative; only 16.1% of the RHL sufferers used a treatment recommended by a physician.

Approximately 96% of the students who experienced RHL during the past year responded that they knew that the causative agent of RHL was a virus. Of these respondents, 72.3% said they had learned about RHL in school. Although the majority of AP respondents had some previous knowledge about RHL, the prevalence of home remedies indicated a lack of knowledge about proper treatment.

Limitations of the study

Our study has some limitations. Because of the difficulty in remembering past events, the likelihood of recall bias is always present in research that uses retrospective data. However, we consider that the estimations of prevalence are acceptable in diseases with typical clinical findings and lesion discrimination, such as herpes labialis. We feel that we obtained accurate data, as the participants were young and educated individuals. In addition, we informed them about the appearance of the RHL lesions, and showed colored photographs of the lesions, in order to obtain data that were as accurate as possible. However, because the study used a self-reported questionnaire, the prevalences should be carefully evaluated.

Conclusions

The results of the study indicated that RHL was a significant health problem among college students. Patients with RHL should be educated about treatment options in order to improve their quality of life. The treatments used by the participants revealed a lack of knowledge about the infection. Patients should be informed about how to protect against the triggering factors and about the timely application of proper treatment. Education about RHL and its treatment is important, as these participants will become health professionals. The curriculum of the School of Health should be revised to include education about RHL and its treatment. It is also likely to be beneficial if the health education of students in other departments includes RHL.

References

1. Gonsalves WC, Chi AC, Neville BW. Common oral lesions: part I. Superficial mucosal lesions. *Am Fam Physician* 2007;**75**:501–7.
2. Arduino PG, Porter SR. Herpes simplex virus type 1 infection: overview on relevant clinico-pathological features. *J Oral Pathol Med* 2008;**37**:107–21.
3. Fatahzadeh M, Schwartz RA. Human herpes simplex labialis. *Clin Exp Dermatol* 2007;**32**:625–30.
4. Opstelten W, Neven AK, Eekhof J. Treatment and prevention of herpes labialis. *Can Fam Physician* 2008;**54**:1683–7.
5. Smith JS, Robinson NJ. Age-specific prevalence of infection with herpes simplex virus types 2 and 1: a global review. *J Infect Dis* 2002;**186**(Suppl. 1):S3–28.
6. Ibrahim AI, Kouwatli KM, Obeid MT. Frequency of herpes simplex virus in Syria based on type-specific serological assay. *Saudi Med J* 2000;**21**:355–60.
7. Ship II , Miller MF, Ram C. A retrospective study of recurrent herpes labialis (RHL) in a professional population, 1958–1971. *Oral Surg Oral Med Oral Pathol* 1977;**44**:723–30.
8. Embil JA, Stephens RG, Manuel FR. Prevalence of recurrent herpes labialis and aphthous ulcers among young adults on six continents. *Can Med Assoc J* 1975;**113**:627–30.
9. Young TB, Rimm EB, D'Alessio DJ. Cross-sectional study of recurrent herpes labialis. Prevalence and risk factors. *Am J Epidemiol* 1988;**127**:612–25.
10. Crivelli MR, Aguas S, Adler I, Quarracino C, Bazerque P. Influence of socioeconomic status on oral mucosa lesion prevalence in schoolchildren. *Community Dent Oral Epidemiol* 1988;**16**:58–60.
11. Axéll T, Liedholm R. Occurrence of recurrent herpes labialis in an adult Swedish population. *Acta Odontol Scand* 1990;**48**:119–23.
12. Sawair FA, Jassim ZA, Malkawi ZA, Jamani KD. Epidemiologic aspects of recurrent herpes labialis among Jordanian university students. *Saudi Med J* 2010;**31**:808–13.
13. Löwhagen GB, Bonde E, Eriksson B, Nordin P, Tunbäck P, Krantz I. Self-reported herpes labialis in a Swedish population. *Scand J Infect Dis* 2002;**34**:664–7.
14. Freiman A, Bird G, Metelitsa AI, Barankin B, Lauzon GJ. Cutaneous effects of smoking. *J Cutan Med Surg* 2004;**8**:415–23.
15. Malkin JE, Morand P, Malvy D, et al. Seroprevalence of HSV-1 and HSV-2 infection in the general French population. *Sex Transm Infect* 2002;**78**:201–3.
16. Lorette G, Crochard A, Mimaud V, Wolkenstein P, Stalder JF, El Hasnaoui A. A survey on the prevalence of orofacial herpes in France: the INSTANT Study. *J Am Acad Dermatol* 2006;**55**:225–32.
17. Harmenberg J, Oberg B, Spruance S. Prevention of ulcerative lesions by episodic treatment of recurrent herpes labialis: a literature review. *Acta Derm Venereol* 2010;**90**:122–30.